gogue power of these was found to diminish very much in the order in which they have been enumerated. Croton oil decidedly induced the most abundant flow of bile; castor oil had the least action of all. In all the cases the increased biliary flow was preceded by hyperæmia of the intestine, and followed—never preceded—by diarrhœa. Röhrig concludes that "these substances undoubtedly excite the production of bile." Less is said of the effects of mercury upon the secretion than might have been desired. It was found that large doses of calomel (twenty grains for a dog) are seldom able to excite flow of bile, if it is quite stopped previously; but if the secretion is simply diminished, it may be increased by the administration of the drug. The greatest action was observed about three hours after administration; it then speedily ceases. There is almost no doubt that the effect of purgatives upon the liver is not to be referred to their immediate action upon the intestine, but to their absorption into the circulation. This is almost proved by two experiments of Röhrig. On the one hand, he found that irritation of any portion of the alimentary canal from the mouth to the anus (including the duodenum), or of the peritoneum, either by mechanical, electrical, or chemical stimuli, had apparently no certain effect upon the secretion of bile. Even when the electrodes were sunk deeply into the substance of the liver, no effect of galvanism was observed. On the other hand, the injection of infusions of senna and rhubarb into the veins immediately and greatly increased the amount of bile secreted.

A more difficult investigation was that of the effect upon the secretion of bile of interference with respiration, and the results obtained were somewhat variable. In many instances there was at first a decided diminution of the quantity of bile, and this was found to correspond with a fall of the general blood-pressure, and was believed to be probably due to it. These phenomena were soon replaced by an increase of the quantity of bile secreted and diminution of the blood-pressure, to which it is probably to be referred. And, finally, there supervened a decline of the discharge and a venous condition of the blood in the body, which also probably stand to each other in the relation of effect and cause.

Röhrig investigated the action of four other drugs upon the liver, as far as it is a bile-secreting gland—namely, strychnia, acetate of lead, carbonate of soda, and opium. Strychnia was found to diminish the secretion; a result which was to be expected in view of the last-mentioned experiment, for strychnia is known to raise the blood-pressure. Acetate of lead was tried, on account of its recognized action on the bloodvessels; when injected either into the intestine or into the veins it diminished the secretion. A similar result was observed after the administration of a solution of carbonate of soda in the same way. Opium increases the secretion of bile; it would appear, therefore, that opium constipates not by arresting the alimentary secretions, but by its action upon the muscular coat of the intestines. Finally, the experimenter confirms Schmulewitsch's observation, that defibrinated blood injected into the portal vein immediately after the complete separation of the liver from the body, causes the secretion of some drops of bile, while a similar injection of salt solution has no effect. The conclusions at which Röhrig arrived are thus briefly stated by himself:—"From all the experiments which I have described, it appears to result that the quantity of fluid which escapes from the biliary vessels of curarized dogs and rabbits is dependent on (1) the vascularity of the abdominal viscera, and (2) the quality of the blood."—*Med. Times and Gaz.*, July 19, 1873.

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4. *The Physiology of Menstruation.*—It is probably the general belief among physiologists and the profession in general that during menstruation one or more ova reach the uterus, and there either become attached to the surface of the mucous membrane or disappear, according as fecundation has occurred or not. If an embryo is developed from the ovum it will correspond with the menstruation immediately preceding—or, in other words, pregnancy will date from the menstruation which last occurred. Dr. Kundrat, of Vienna (Rokitansky's senior Assistant), has just published an account of certain researches of his upon the anatomical condition of the uterine mucous membrane before,

during, and after menstruation, which throws very grave doubts upon the correctness of this belief (*Medizinsche Jahrbücher*, 1873, vol. ii., p. 135). Kundrat's investigations are all the more worthy of attention that they were of a purely anatomical nature. He examined the mucous membrane of the human uterus in the intervals of menstruation, immediately before the hemorrhage, during the hemorrhage, and again after it had ceased, and the results which he obtained are certainly in favour of the considerable modifications which he would introduce into the physiology of ovulation and menstruation as presently received. The mucous membrane of the human uterus in the "state of rest" has certain peculiarities, as pointed out by the author. There is no submucous tissue, and the mucosa comes into immediate union with the muscular layer. Its matrix is peculiarly rich in round or spindle-shaped cells. The glands, which it is known to possess in great numbers, are lined, like the free mucous surface, with ciliated epithelium. This condition is markedly altered at the monthly period of uterine activity. The mucous membrane is swollen, thick, loose, and almost diffluent, covered with a whitish or bloody mucus, finely injected at spots, and in many cases uniformly coloured of a deep red. A microscopical examination reveals increased abundance of the cellular matrix, especially at the surface, with great elongation and dilatation of the glands. So far there is nothing specially original in the description given by Kundrat, but new and important facts remain to be enumerated. He discovered, in the first place, that the condition of uterus just described probably precedes the occurrence of the discharge of the ovum and—what is perhaps more striking—the menstrual flow by "several days." The author considers that this observation goes far to prove that the uterus is prepared for the reception of the ovum a certain time before the rupture of the Graäfian vesicle. Again, while the rough characters remain as described during the menstrual flow, with the addition of the oozing from the surface, and for a short time after it has ceased, careful examination reveals a very remarkable change in the microscopic appearances. The cells of the stroma and the vessels, as well as of the epithelium of the glands and surface, are dull in appearance and filled with fat granules. The question occurs, What is the relation of the hemorrhage to this fatty degeneration of the cells and vessels? Kundrat replies by stating his belief that the hemorrhage does not cause the fatty change, but is caused by it. He refers to the fatty change which is known to occur at the end of pregnancy, and would consider the two phenomena homologous. He also points out the improbability of the cause of the flow being found in congestion, as this occurs frequently without hemorrhage. One fact he has ascertained, is, that the fatty change is most abundant at the surface of the mucosa, where the bleeding takes place. The anatomical sequence of events, therefore, according to Kundrat, at the monthly period of uterine activity is—swelling of the mucosa, fatty change in the cells and vessels, vascular rupture, and hemorrhage. With the blood much altered epithelium is thrown off, but not the whole mucosa, as some believe. It is a short time after the cessation of the menses before the mucous membrane has returned to its "condition of rest."

In inquiring now into the physiological relations of the three processes—the swelling of the mucosa, the discharge of the ovum, and the flow of menstrual blood—Kundrat insists strongly upon the ascertained chronology of the events. The first mentioned of the three is the first in order of time, and it is almost certainly the preparation for the reception of the ovum. It is much more improbable that the uterus during the menstrual flow is in a condition suitable for this function—with a retrogressive process going on in the mucosa, its vessels ruptured, and its surface discharging blood. It is even more improbable that the mucosa in this state of degeneration will on the descent of an ovum take on a totally opposite process, and become highly developed. The type of the impregnated uterus is seen in the active uterus when the mucosa is swollen and menstruation has not yet commenced. If the bleeding does commence, it is a sign that the ovum has perished, and that the mucosa is returning to its state of rest. Thus we arrive at the highly important conclusion that a developing ovum, or growing embryo, belongs not to a menstrual period just past, but to one just prevented by fecundation. Löwenhorst has already expressed this opinion from a consideration of the clinical aspects of menstruation, and we believe that the method of calculating the duration of pregnancy suggested by the new facts is not altogether a new one among the gynæcologists and practitioners of this country.—*Med. Times and Gaz.*, July 26, 1873.

5. *New Sign of Death.*—Dr. Liersch states it is well known that when the cornea of a living eye is punctured to evacuate the aqueous humour the pupil always contracts; this he asserts does not occur when the puncture is made in the eye of a dead person. He points this out as a simple and certain means of diagnosis of apparent from real death.—*Revue des Sciences Médicales*, July, 1873, from *Vierteljahrs f. gericht Med.*, April, 1873.

6. *Influence of Changes in the Barometric Pressure on the Phenomena of Life.*—Some time ago M. Bert showed that the evil results which immediately follow the too rapid passage of men (*e. g.*, in divers), ascending rapidly after submersion at a considerable depth, or of animals from compressed air at a pressure of several atmospheres to the normal pressure, are due to the formation of bubbles of gas in the blood. These are due to the nitrogen which was dissolved in the blood during the continuance of the pressure returning to the gaseous condition when the pressure is removed. The bubbles of gas arrest the circulation in various parts of the body, and especially in the lumbar portion of the spinal cord, where they give rise to paraplegia or softening. When they occur in large quantity they obstruct the pulmonary circulation, distend the heart, and cause death more or less rapidly. The danger arising to different animals from sudden removal of pressure varies with the species, and even with the individual. It seems to increase with the size; and, whereas a rapid change from 11 atmospheres to one is requisite to produce death in sparrows, a change from 9 atmospheres will cause it in cats and rabbits, from 7 or 8 in dogs, and in man from 5 atmospheres. Paraplegia generally occurs in dogs after a change from 7, and death from 7½ atmospheres. In seeking an explanation of these differences, M. Bert found that the arterial blood of a dog breathing air at the normal pressure is almost saturated with nitrogen at that pressure. Blood collected over mercury from a dog exposed to an increasing pressure begins to disengage bubbles of nitrogen when the pressure of the air which it respires has attained 3 atmospheres, but no bad effects appear till the pressure has been carried to 7 atmospheres. There is, therefore, a time after the animals have been exposed to pressures varying from 3 to 7 atmospheres, when the blood contains small bubbles of gas, although the animals do not seem to suffer. The reason of this is, that the bubbles are so extremely small that they pass through the capillaries without causing any obstruction, and gradually disappear. During this time, however, the animal is in great danger; and, if the bubbles should happen to aggregate and obstruct some of the vessels, accidents will occur. Thus it happens that some divers are paralyzed, or even killed, by diminutions of pressure which do not affect others.

While he was seeking to investigate this problem still further, M. Bert's apparatus unfortunately exploded, and he was thus deprived, for the present, of the means of prosecuting his researches. At the time when the explosion took place, a dog was contained in the apparatus, and subjected to a pressure of 9½ atmospheres. The dog seemed well during the continuance of the pressure, but, when the apparatus burst, it died instantaneously. Not only were all the bloodvessels filled with gas, but the abdominal walls were distended with it, and there was general emphysema of the subcutaneous and intercellular connective tissue. This shows that the gas may become stored up in the other fluids of the body, as well as the blood; and the reason why the author has not noticed this before is, that in all his other experiments the pressure has been diminished too gradually. He considers that the horrible itching, to which divers give the name of fleas, and the muscular swellings which they call *mouton*, are due to a slight gaseous infiltration of the cellular tissue. The unfortunate destruction of his apparatus prevents M. Bert at present from pursuing his studies regarding the best means of preventing the occurrence of accidents